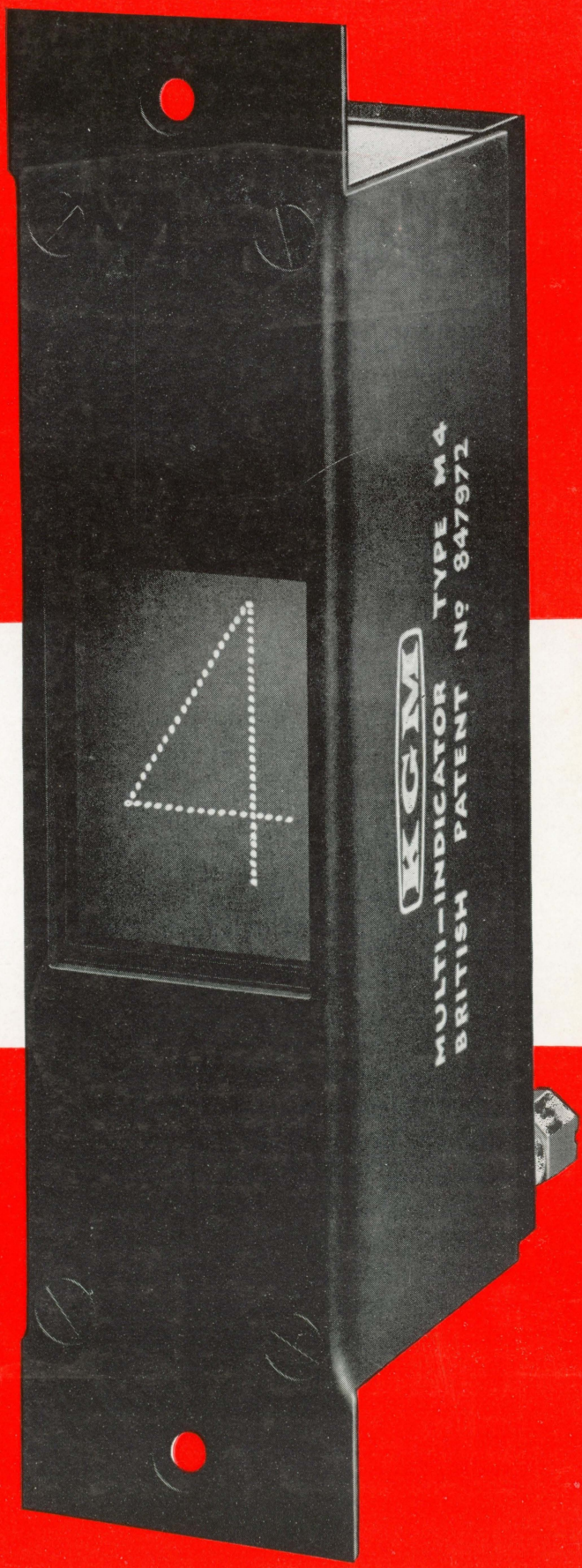
KGM

inline

Indicators

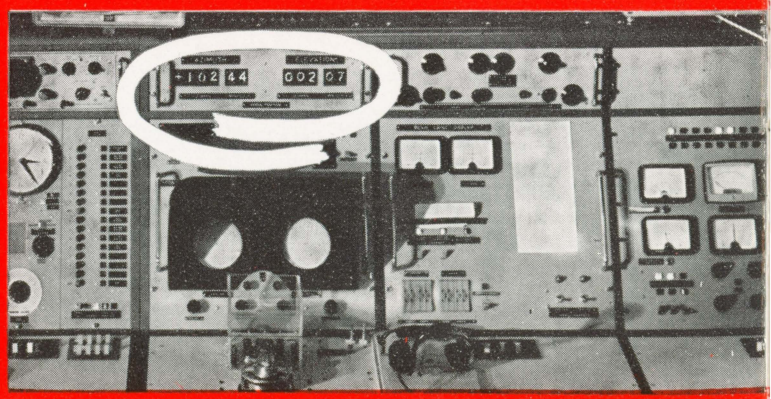


NUMERIK INDICATORS
DISTRIBUTED EXCLUSIVELY
BY THE GENERAL RADIO COMPANY
WEST CONCORD, MASSACHUSETTS

KGM

IN - LINE INDICATORS

The direction of the 85ft. dish aerial used to communicate with the Telstar satellite is indicated in digital form on K.G.M. In-line Indicators which show the bearings in azimuth and elevation (as seen below). The indicators used are type M.4 from the K.G.M. Standard Range.



ARE UNIQUE

The unique patented design of K.G.M. In-line Indicators provides a brilliant, crystal-clear display without any focusing trouble; equally clear viewing from any angle; and—most important—compactness that ensures a neat fit into the smallest possible space.

The exclusive design makes ingenious use of a well known optical effect. The display required is engraved on acrylic plates of non-yellowing quality. These plates are mounted in a tightly packed stack and individually edge-lit by selectively energising the circuit to the lamps, which are the S6/8 cap midget panel type. This method ensures brilliant at-a-glance characters clearly seen over a wide angle, set in a compact, hard-wearing case. (Sectional view overleaf).

A wide range of Indicators is available varying in overall dimensions, character sizes and number of plates. This gives the utmost flexibility in building up numerals, words, phrases and legends with the maximum number of permutations Mounting can be either horizontal or vertical. The Indicators are made from special long-life materials and the vital acrylic plates are guaranteed not to discolour or distort with heat or age. There is also a variety of filters available to obtain the clearest viewing under different conditions of room lighting. Different colours can be used for different characters or words in the same In-line Indicator.

The outer case is pressed from aluminium alloy type NS 3. It is then chemically etched and anodised black.

The plates are made of clear optically selected acrylic.

The masks are of black foil.

The lamp holders are pressure die-cast in the zinc based alloy 'Mazak' or machined from dural bar, according to type. Both methods allow a number of lamps to be lit without overheating.

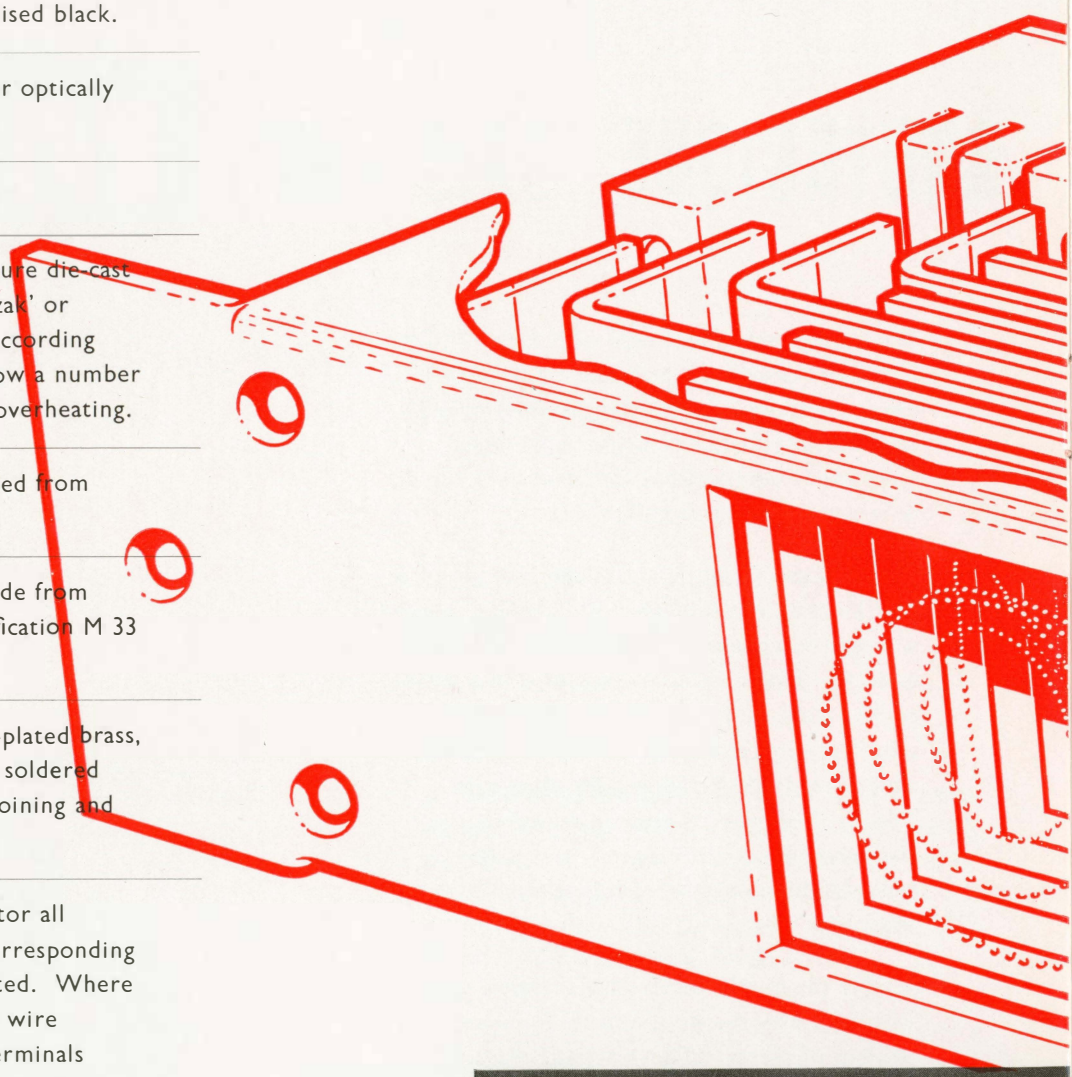
The contact block is moulded from nylon-filled bakelite.

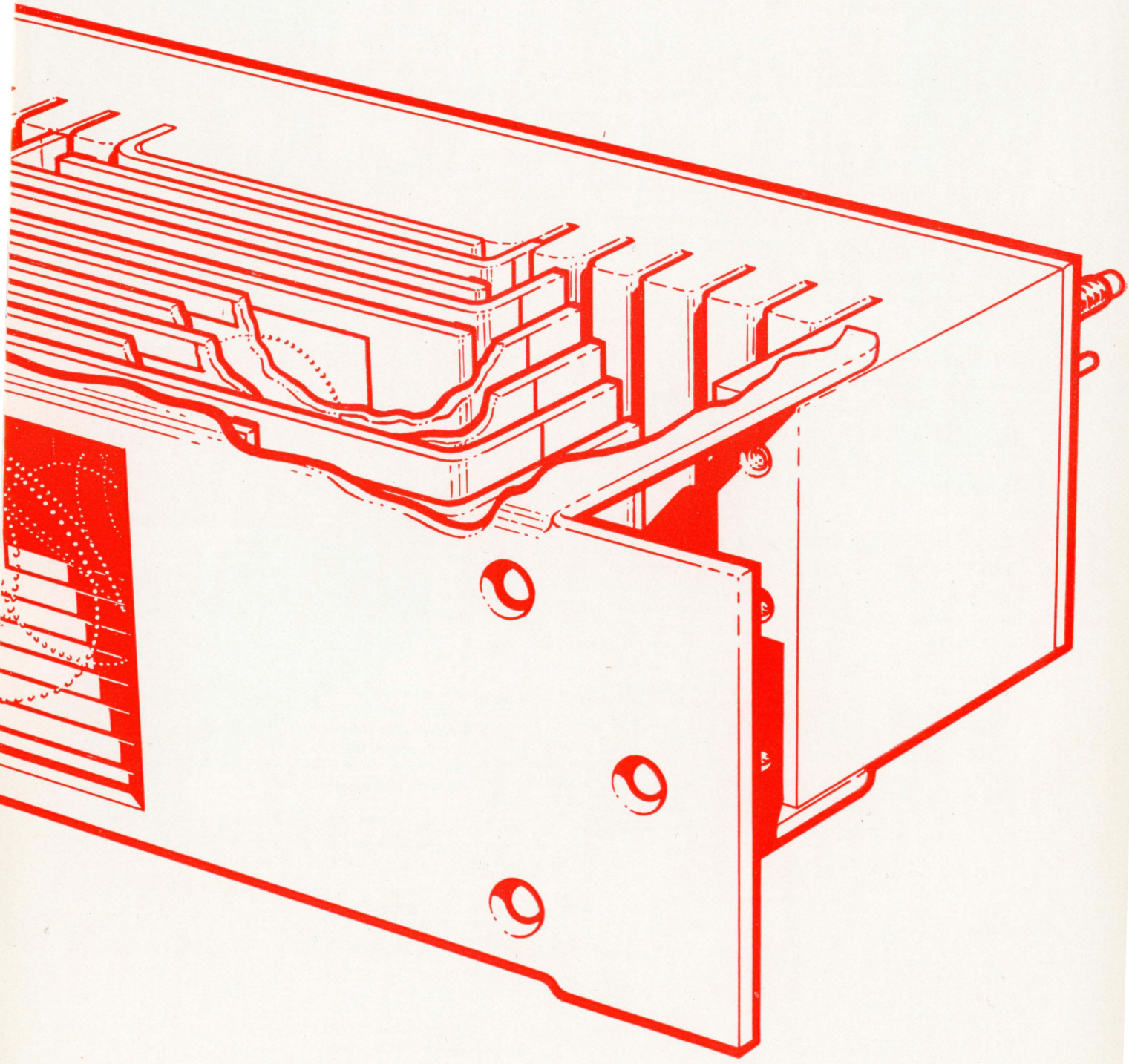
The spring contacts are made from nickel silver to GPO Specification M 33 (comp 1 and temp 1).

The terminals are of silver-plated brass, with provision for either a soldered wrap-round joint or axial joining and soldering.

On the back of each Indicator all terminals are numbered corresponding to the plate to be illuminated. Where applicable it is advisable to wire together the "common" terminals marked 'C' in each block instead of relying on any electrical connection through the frame.

The printed circuit lamp common return with certain Indicators is manufactured from copper-clad SRBP, or epoxy glass laminate, gold flashed, and offers the following:
Isolation from earth if required.
The common can be divided to isolate certain lamps.





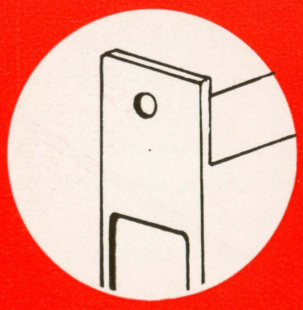
SUMMARY OF INDICATOR TYPES AND FACILITIES

INDICATOR		M3	M4	M5	M6	M9	M13	M14	M16	M17	M18	M20
NO. OF PLATES		10	12	12	10	10	5 x 12	10	16	10	12	10
NUMBER OF LAMPS PER PLATE		1	1	1	1	4	1	2	1	2	1	4
MAX. CHARACTER HEIGHT		·8	·875	·4	·3	1·25	·36	·625	·48	2·0	·8	4·0
WINDOW	Height	·95	1·22	·62	·45	1·5	·50	·75	·625	2·5	1·05	4·5
	Width	·75	·85	·46	·375	2·5-12	1·83	2·5-12	·45	1·5	7·5	3·25
OVERALL	Height 'A' Type	2·5	4·5	1·75	1·5	—	—	—	—	—	—	10·0
	Height 'B' Type	2·0	3·51	1·25 *	1·062 *	2·0	1·19 *	1·0	1·25	4·7	2·375	9·0
	Width	1·0	1·11	·625	·5	6·5-16	1·94	6·5-16	·62	2·0	1·0	4·125
	Depth	2·6	2·18	5·6	4·75	2·1	5·80	2·1	5·6	2·05	2·8	2·0

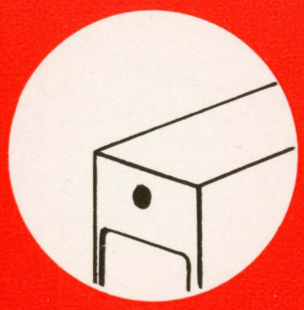
**Mounting tube required*

M10 is available in a variety of sizes to customers requirements.
In addition to the range of in-line indicators, K.G.M. also manufacture to customers' specification a large range of annunicator panels in types too various to list here. Details on application.

MOUNTINGS



TYPE A



TYPE B

WIRING INFORMATION

Each terminal makes contact with one side of one lamp. The other side of all lamps is common and either grounded to the frame of the Indicator or isolated from the frame of the Indicator according to type. In multi-block indicators it is advisable to wire together the common terminals marked "C" in each block instead of relying on any electrical connection through the frame. Divided common facility within each block is available. The terminals are engraved with the numbers 1 to 10 and where there is more than one lamp per plate, the terminals marked with the same number should be connected together.

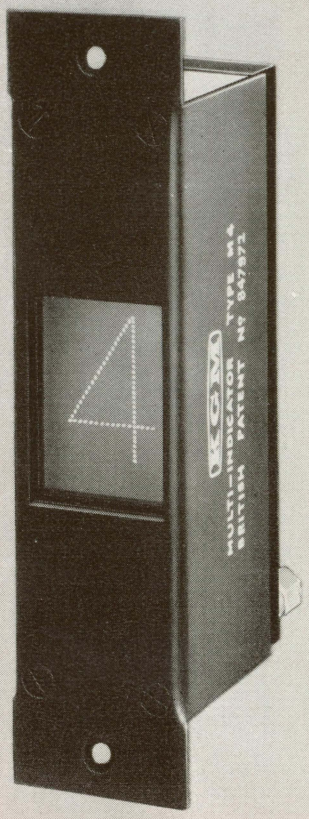
LAMPS

The lamps employed in K.G.M. in-line indicators are of the S6/8 cap midget panel type. Most of the lamps are available in joint-service and inter-service approved types. The following ratings are available from stock.

Joint-service or Inter-service No.	*Rated Voltage*	*Rated Current Amps*	*Wattage*	*Life Hours*
X995—9122	28	0.08	2.24	1,000
X995—9118	28	0.04	1.12	1,000
	14	0.08	1.12	1,000
X995—9210	12	0.1	1.2	1,000
	6	0.2	1.2	500
X995—9119	6	0.1	0.6	1,000

M3 Neat compact unit originally designed for space allotted to a G.P.O. key switch: has the largest proportion of indicating area to total frontal area. There are eleven rear-facing silver-plated soldering lugs, and the common is connected to the frame.

Design features include: clear brilliant characters; approximate height ·8″; total viewing angle, 85° (horizontal); 10 symbols characters window ·95″ x ·75″. Overall unit height 2″; width 1″; depth 2·43″. One lamp per plate.



M4 The M4 is the standard indicator in the K.G.M range and is by far the most versatile and popular model and is always available from stock.

The following facilities are available:—

12 plates on which characters or special legends according to customer's requirements can be engraved.

A viewing angle of 100°.

Special versions of this indicator can provide:

(*a*) isolation of common from frame by means of a printed circuit;

(*b*) the printed circuit common return may be divided for use with special switching arrangements;

(*c*) an enlarged window for words, legends or symbols;

(*d*) a fully tropicalised and waterproof version (M4T) for Services use.

12 plates for symbols; characters ·875″ high window 1·22″ x ·85″; overall unit height 3·5″(4·5″ with flanges); width 1·1″; depth 2·11″, including bolts. One lamp per plate.

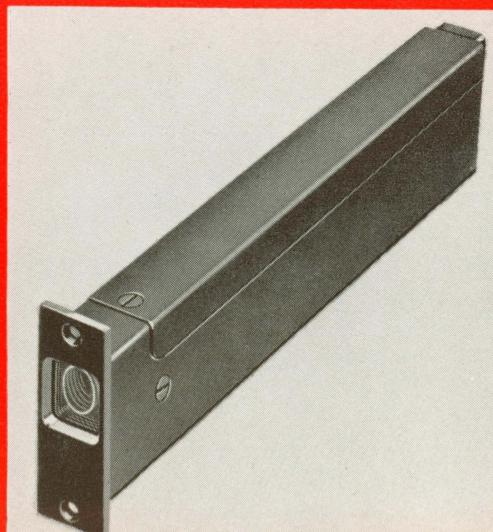
M5 Intended to display up to 12 symbols in equipment where compactness is the mainrequirement.

Connections by means of miniature Unitor plug—mating sockets available. Has a small frontal area, saving panel space. Character sizes up to ·4″ high. Design features include clear brilliant digits from 0 to 9 plus two other symbols, and 60° viewing angle (horizontal). Common connected to frame. Two types of mounting with following stacking modules are available: Type A—1·75″ x ·625″; Type B— 1·25″ x ·625″ (B type requires mounting tube).

12 symbols; characters ·4″ high; window ·62″x ·46″. Overall unit height 1·25″ (1·74″ with flanges; width ·625″; depth including plug 5·6″. One lamp per plate.

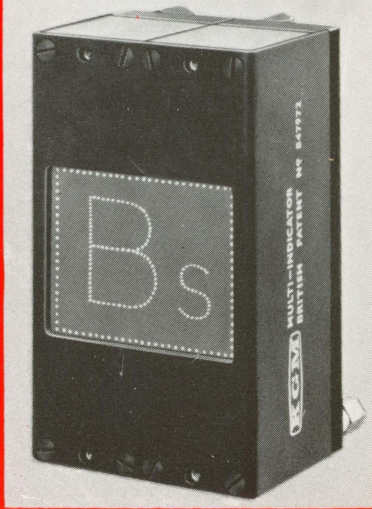
M6 Smallest indicator in the range, intended for displaying up to 10 symbols in very small and compact area. Connections by means of miniature Unitor plug —mating sockets are available. Design features include clear brilliant digits from 0 to 9 approximately ·3″ high; total viewing angle 60° (horizontal); and two types of mounting with the following stacking modules: Type A—1·5″ x 15″; Type B—1·062″ x ·5″. (B Type requires mounting tube). Common connected to frame.

10 symbols; characters ·3″ high; window ·45″ x ·375″. Overall height 1·062″ (1·49″ with flanges); width ·5″; depth, including plug, 4·75″. One lamp per plate.



M9 Made in varying lengths primarily for words messages and legends. 10 plates are provided for the sizes shown, and character sizes are in accordance with customer's requirements. Each plate is illuminated by four lamps. Different colours can be used on different plates to give further prominence to any special message. Rear mounting by four 8 BA screws. Escutcheon plates can be specially manufactured to order and the Indicator may be fitted into instrument cases designed and made by K.G.M. to suit customer's requirements. Special mountings can also be supplied if requested.

10 plates for words, phrases and symbols; character sizes according to requirements; window sizes available 2·5″ to 12″ x 1·5″ height; overall length 6·5″ to 16″; height 2·0″; depth 2·1″ max. Four lamps per plate.

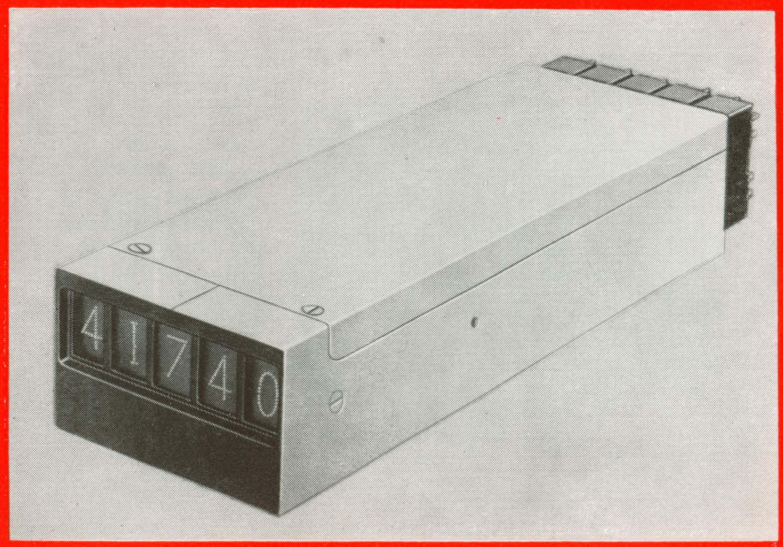


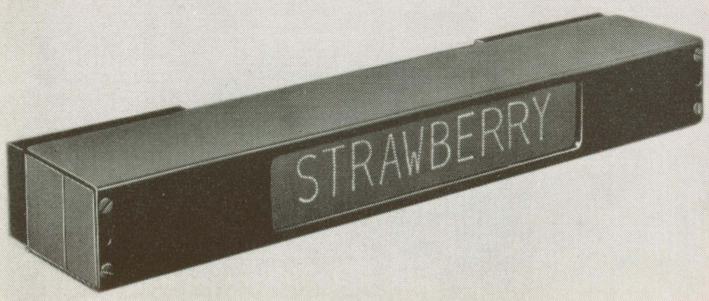
M10 Primarily designed for special applications, this Indicator features two M4 lamp housings in one case. 12 plates are available for digits, characters or legends. The Indicator can be mounted either horizontally or vertically and each plate is normally illuminated by two lamps.

(These indicators are made to customers' order, and delivery is by arrangement).

M13 Incorporated are 5 sets of 12 symbols in a single block. Small and compact, the Indicator has character sizes of not more than ·36″ in height. Connection is by five miniature Unitor plugs—mounting tubes and mating sockets are available (details on request).

Single block of five sets of 12 symbols; characters ·36″ high; window 1·83″ x ·50″; overall unit height 1·19″; width 1·94″; depth 5·80″ including plug. One lamp per plate.





M14 Similar in construction to the M9, but only half the height. Each plate is illuminated by two lamps. This unit again is used for words and messages. Ten plates for words, phrases and symbols; character sizes according to requirements.

Window sizes available 2·5″ to 12″ x ·75″ height; overall length 6·5″ to 16″; height 1″; depth 2·1″. Two lamps per plate.

(These indicators are made to customers' order, and delivery is by arrangement).

M16

Similar to the M5, the M16 has been specially designed to take 16 plates where required and is fitted with a plug and mounting tube for plug-in application. Common return is normally isolated from frame.

16 plates; character ·48″ high; window ·625″ x ·45″; overall height 1·25″; width ·62″; depth 5·6″. One lamp per plate.

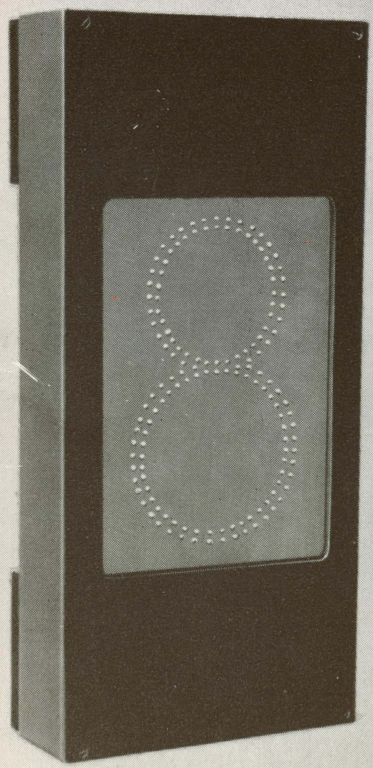
(These indicators are made to customers' order, and delivery is by arrangement).

M17

A further variant of the M9 and M14. Ten plates for words, phrases, symbols or characters of sizes according to requirements.

Window size 2·5″ x 1·5″. Overall width 2″; height 4·7″ depth 2·05″. Two lamps per plate.

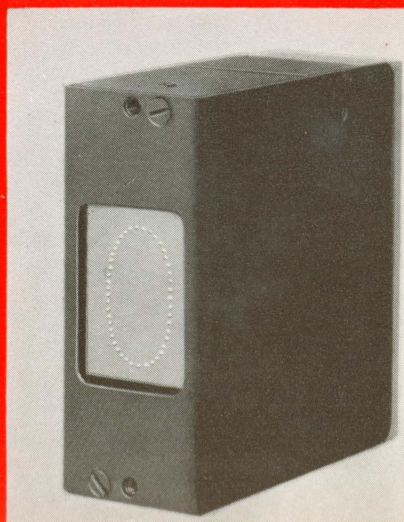
(These indicators are made to customers' order, and delivery is by arrangement).



M18

A twelve-plate Indicator with common return normally isolated from frame.

12 symbols; characters ·8″ high; window 1·05″ x ·75″; overall height 2·375″; width 1·0″; depth 2·8″. One lamp per plate.



M20

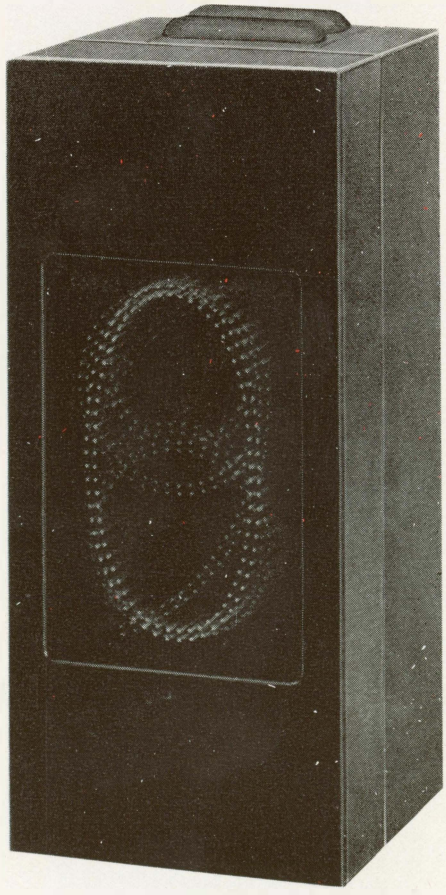
A ten-plate Indicator for large lettering with each plate illuminated by four lamps. Character size is determined by requirements, the standard digit size being 4″.

10 plates for words, phrases or symbols; window 4·5″ x 3·25″; Overall height 9″-10″ with flanges; width 4·125″; depth 2·0″. Four lamps per plate.

K.G.M. Counter Units will count at fast rates up to 5 kc/s and presents the reading as brightly illuminated digits. The unitary form of construction and simple interconnection arrangement makes these Ring Counters adaptable to a wide variety of requirements.

KGM

DECADE COUNTER UNITS



Two sizes of Counter are available:

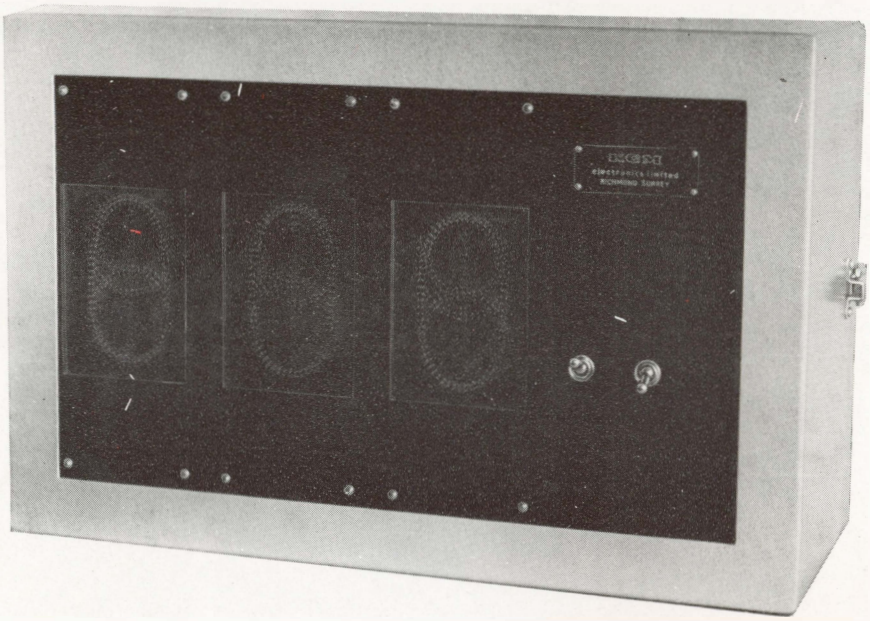
(1) Type C/M18 showing digits 0.8″ high

(2) Type C/M20 showing digits 4″ high

The counter is a scale-of-ten unit which drives the lamps in the indicator, directly in the C/M18 size and through a power switching stage in the larger C/M20 size. The circuit is a simplified form of ring counter employing a minimum of components and hence having high reliability. Counter units may be connected in cascade to provide counts to any number of digits required. These Counters will count random pulses at a maximum rate of 5 kc/s. A pulse generator is included in the circuit to provide a higher input impedance and a paralysis facility, allowing the use of mechanical contact pulse drives, which usually suffer from contact bounce. The paralysis time is adjustable to customer requirements. The associated power unit will drive ten of the C/M18 units or three of the larger C/M20 units.

Specification:	C/M18	C/M20
Dimension: Height	2·375″	10·0″
Width	1″	4·125″
Depth (Counter unit only)	3·5″	2·4″
,, (including Indicator)	6·75″	4·5″
Weight (approximately)	8 oz.	2¾ lb.
Supply: Voltage (±20%)	18V.	30V.
Current, static	150 mA.	0·5 A.
,, counting	200 mA.	0·7 A.
Consumption, static	2·7W.	15W.
Temperature range, Centigrade	0—40°C.	0—50°C.
Maximum counting rate	5 kc/s	5 kc/s
Imput Pulse requirements: minimum volts	6V.	10V.
duration, micro seconds	200	50

K.G.M. COUNTER CHASSIS

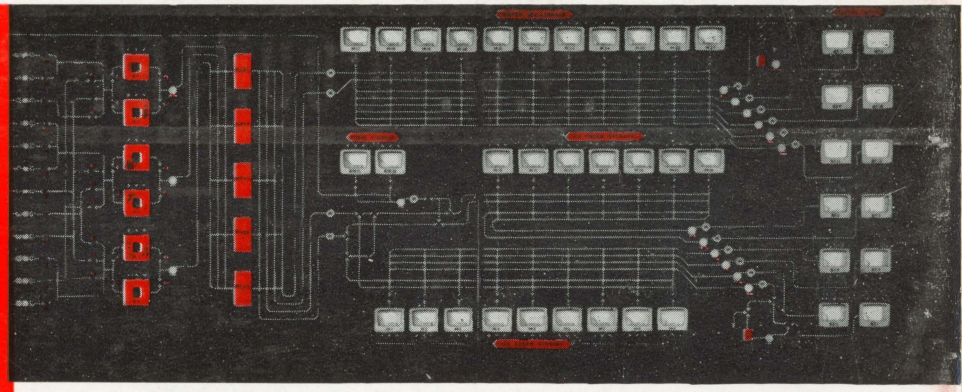


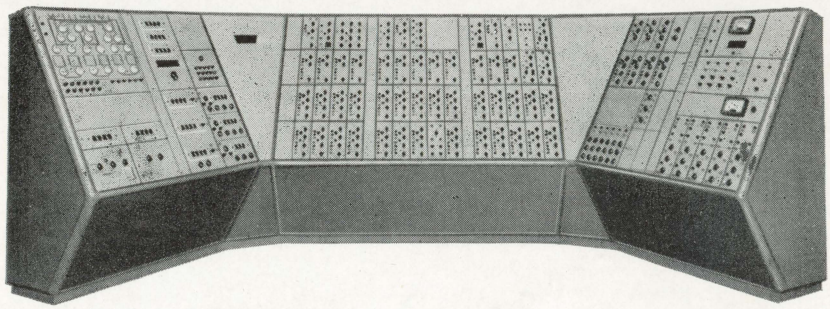
K.G.M. are able to supply in the form of a standard unit a Counter Chassis comprising 3 decades of C/M 20 counters, a Power Unit and interconnecting circuitry. This unit can be applied to a variety of applications, but will specially interest studios wishing to count film footage as this unit may be viewed from some distance as the indicators have a 4 inch character.

As the K.G.M. Counter Unit employs solid state switches it can be expected to have a long life and will operate at higher rates the mechanical types. A simple cam and contact or dry reed switching element can be used to count shaft rotation on a variety of mechanisms. For batch counting on conveyor belts there are many techniques available, and for fast counting application electronic sensors are necessary, such as the interruption of a light beam on a photo-electric cell, the employment of a proximity detector for metallic subjects, or the use of ulra-sonic techniques. K.G.M. engineers will be happy to advise on the most suitable method of initiating signals for high speed counting.

KGM

MIMIC DIAGRAMS and GRAPHIC DISPLAYS





To meet the increasing demand for Mimic Diagrams and Graphic displays, K.G.M. have developed a number of systems of active and semi-active displays for the simulation of control or process functions. These systems can be tailored to meet individual requirements.

The Company undertakes the design and manufacture of electrical and electronic switching equipment associated with display systems. All types of panels, cases and consoles can be designed and made to suit special requirements.

KGM electronics limited

Phone: RIChmond 7171

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